

AMENDMENTS TO THE CLAIMS

1. (Previously Presented) A printing device, having at least one electro-photographic printing unit (10.1), to which a transfer medium (12) for transferring a toner powder to respectively one substrate (14.1, ..., 14.5, 14.6) in a transfer zone is assigned, wherein one or more substrates (14.1, ..., 14.5, 14.6) can be conducted through the transfer zone by a transport system (16), the printing device comprising:

the transport system (16) for each said substrate (14.1, ..., 14.5, 14.6) having a receiving device (18.1, ..., 18.5, 18.6) which can be heated, to which one or more heating elements (20.1, ..., 20.5, 20.6) for introducing heat energy into the substrate (14.1, ..., 14.5, 14.6) are assigned, and

a cooling device (28) is assigned to the transfer medium (12) of each said printing unit, which removes heat energy from the transfer medium (12);

wherein upstream of the first printing unit (10.1) of the printing units (10.1, ..., 10.5, 10.6) arranged one behind the other in a transport direction (A) of the receiving device (18.1, ..., 18.5, 18.6), the substrate (14.1, ..., 14.5, 14.6) can be received in a separate receiving device (18.1, ..., 18.5, 18.6) and can be sequentially conducted to the printing units (10.1, ..., 10.5, 10.6).

Serial No.: 10/567,471

2. (Previously Presented) The printing device in accordance with claim 1, wherein each said heating element (20.1, ..., 20.5, 20.6) is arranged on a side of the substrate (14.1, ..., 14.5, 14.6) facing away from the receiving device (18.1, ..., 18.5, 18.6) of the transport system (16).

3. (Previously Presented) The printing device in accordance with claim 2, wherein the substrate (14.1, ..., 14.5, 14.6) is fixed in place at least partially on the receiving device (18.1, ..., 18.5, 18.6).

4. (Previously Presented) The printing device in accordance with claim 3, wherein the receiving device (18.1, ..., 18.5, 18.6) has an approximately frame-shaped receiving structure for supporting the respective substrate (14.1, ..., 14.5, 14.6).

5. (Previously Presented) The printing device in accordance with claim 4, wherein a plurality of printing units (10.1, ..., 10.5, 10.6) are arranged one behind the other for imprinting each said substrate (14.1, ..., 14.5, 14.6) in a different color.

Serial No.: 10/567,471

6. (Previously Presented) The printing device in accordance with claim 5, wherein the transport system (16) conducts a plurality of the substrates (14.1, ..., 14.5, 14.6) arranged one behind the other through the transfer zones of each of the printing units (10.1, ..., 10.5, 10.6).

7. (Previously Presented) The printing device in accordance with claim 6, wherein the transport system (16) moves the substrate (14.1, ..., 14.5, 14.6) continuously.

8. (Currently Amended) The printing device in accordance with claim [[7]] 44, wherein upstream of the first printing unit (10.1) of the printing units (10.1, ..., 10.5, 10.6) arranged one behind the other in the transport direction (A) of the receiving device (18.1, ..., 18.5, 18.6), the substrate (14.1, ..., 14.5, 14.6) can be received in a separate receiving device (18.1, ..., 18.5, 18.6) and can be sequentially conducted to the printing units (10.1, ..., 10.5, 10.6).

9. (Currently Amended) The printing device in accordance with claim [[8]] Z, wherein downstream of the last printing unit (10.6) of the printing units (10.1, ..., 10.5, 10.6) arranged one behind the other in the transport direction (A)

Serial No.: 10/567,471

of the receiving device (18.1, ..., 18.5, 18.6), the substrate (14.1, ..., 14.5, 14.6) can be removed from the respective receiving device (18.1, ..., 18.5, 18.6).

10. (Previously Presented) The printing device in accordance with claim 9, wherein following removal from the receiving device (18.1, ..., 18.5, 18.6) the substrate (14.1, ..., 14.5, 14.6) can be transferred to a transfer unit or a sorting unit.

11. (Previously Presented) The printing device in accordance with claim 10, wherein the transport system (16) has a conveying device (50), which transports the receiving device (18.1, ..., 18.5, 18.6) along a guidance arrangement (52).

12. (Previously Presented) The printing device in accordance with claim 11, wherein the conveying device (50) has at least one of a toothed belt, a belt, and a conveying element.

13. (Currently Amended) The printing device in accordance with claim ~~[[13]]~~ 12, wherein the guidance ~~device arrangement~~ can be an arrangement of one of guide rods (52), guide rails, and guide elements.

Serial No.: 10/567,471

14. (Previously Presented) The printing device in accordance with claim 13, wherein the guidance arrangement (52) forms one of a closed track, and a conveying circuit for conveying the receiving device (18.1, ..., 18.5, 18.6).

15. (Currently Amended) The printing device in accordance with claim 14, wherein a cleaning device (54) for the receiving device (18.1, ..., 18.5, 18.6) is arranged at [[a]] the closed track or the conveying circuit.

16. (Previously Presented) The printing device in accordance with claim 15, wherein the cleaning device (54) is arranged following the last printing unit (10.6) of the printing units (10.1, ..., 10.5, 10.6) arranged one behind the other in the conveying direction of the receiving device (18.1, ..., 18.5, 18.6), and the receiving device (18.1, ..., 18.5, 18.6) can be introduced into the cleaning device (54) following the removal of the substrate (14.1, ..., 14.5, 14.6).

17. (Previously Presented) The printing device in accordance with claim 16, wherein the cleaning device (54) is arranged upstream of the first printing unit (10.1) of the printing units (10.1, ..., 10.5, 10.6) arranged one behind the other in the conveying direction (A) of the receiving device (18.1, ..., 18.5, 18.6).

Serial No.: 10/567,471

18. (Previously Presented) The printing device in accordance with claim 17, wherein the substrate (14.1, ..., 14.5, 14.6) is respectively received in a separate receiving device (18.1, ..., 18.5, 18.6) downstream of the cleaning device (54) and upstream of the first printing unit (10.1) of the printing units (10.1, ..., 10.5, 10.6) in the conveying direction (A) of the receiving device (18.1, ..., 18.5, 18.6).

19. (Currently Amended) The printing device in accordance with claim 18, wherein the transfer medium (12) is a transfer roller or a transfer belt containing at least a portion of the cooling device ~~[(12)]~~ 28.

20. (Currently Amended) The printing device in accordance with claim 19, wherein the transfer medium ~~(120)~~ (12) of the printing unit (10.1, ..., 10.5, 10.6) has a lower temperature in the transfer zone formed with the substrate (14.1, ..., 14.5, 14.6) at least in an area of the contact surface, than a surface of the substrate (14.1, ..., 14.5, 14.6).

Serial No.: 10/567,471

21. (Previously Presented) The printing device in accordance with claim 20, wherein the substrate (14.1, ..., 14.5, 14.6) rests on a conductive support of the receiving device (18.1, ..., 18.5, 18.6) and the support is charged with a reversed polarity sign compared with the charge of the toner.

22. (Previously Presented) The printing device in accordance with claim 21, wherein the substrate (14.1, ..., 14.5, 14.6) is moved by the transport system (16) beyond the transfer medium (12) synchronously with a circumferential speed of the transfer medium (12), and a voltage which, with respect to the transfer medium, is opposite to the charge of the toner, is applied to the receiving device (18.1, ..., 18.5, 18.6) in the transport system (16).

23. (Withdrawn) The printing device in accordance with claim 22, wherein each said substrate (14.1, ..., 14.5, 14.6) is charged by the heating elements (20.1, ..., 20.5, 20.6) embodied as at least one of infrared radiation devices, hot-air blowers and by charging with heat energy.

24. (Previously Presented) The printing device in accordance with claim 22, wherein each said substrate (14.1, ..., 14.5, 14.6) can be charged with heat energy by one of a metal tape heating and a metal foil heating device, wherein a wavelength of heat radiation can be exactly matched to an absorption maximum of at least one of the substrate and a plastic matrix of the toner.

25. (Previously Presented) The printing device in accordance with claim 24, wherein a temperature sensor (26) is assigned to the substrate (14.1, ..., 14.5, 14.6), at least one of the heating element (20.1, ..., 20.5, 20.6) and the transport system (16) can be controlled by a control device (24) as a function of a signal emitted by the temperature sensor (26).

26. (Previously Presented) The printing device in accordance with claim 25, wherein the temperature sensor (26) is a pyrometer.

27. (Previously Presented) The printing device in accordance with claim 26, wherein a conditioned air flow is directed onto a surface of at least one of the transfer medium (12) and at least one liquid-cooled contact roller of the cooling device (28) roll off on the transfer medium (12).

Serial No.: 10/567,471

28. (Previously Presented) The printing device in accordance with claim 27, wherein the cooling device (28) removes heat energy from the transfer medium (12) downstream of the transfer zone and upstream of the photo-conductor (30) of the printing unit (10.1), viewed in the transport direction of the transfer medium (12).

29. (Previously Presented) The printing device in accordance with claim 1, wherein the substrate (14.1, ..., 14.5, 14.6) is fixed in place at least partially on the receiving device (18.1, ..., 18.5, 18.6).

30. (Previously Presented) The printing device in accordance with claim 1, wherein the receiving device (18.1, ..., 18.5, 18.6) has an approximately frame-shaped receiving structure for supporting the respective substrate (14.1, ..., 14.5, 14.6).

31. (Previously Presented) The printing device in accordance with claim 1, wherein a plurality of printing units (10.1, ..., 10.5, 10.6) are arranged one behind the other for imprinting each said substrate (14.1, ..., 14.5, 14.6) in a different color.

Serial No.: 10/567,471

32. (Previously Presented) The printing device in accordance with claim 1, wherein the transport system (16) conducts a plurality of the substrates (14.1, ..., 14.5, 14.6) arranged one behind the other through the transfer zones of each of the printing units (10.1, ..., 10.5, 10.6).

33. (Previously Presented) The printing device in accordance with claim 1, wherein the transport system (16) moves the substrate (14.1, ..., 14.5, 14.6) continuously.

34. (Canceled)

35. (Previously Presented) The printing device in accordance with claim 1, wherein downstream of the last printing unit (10.6) of the printing units (10.1, ..., 10.5, 10.6) arranged one behind the other in the transport direction (A) of the receiving device (18.1, ..., 18.5, 18.6), the substrate (14.1, ..., 14.5, 14.6) can be removed from the respective receiving device (18.1, ..., 18.5, 18.6).

36. (Previously Presented) The printing device in accordance with claim 1, wherein following removal from the receiving device (18.1, ..., 18.5,

Serial No.: 10/567,471

18.6) the substrate (14.1, ..., 14.5, 14.6) can be transferred to a transfer unit or a sorting unit.

37. (Previously Presented) The printing device in accordance with claim 1, wherein the transport system (16) has a conveying device (50), which transports the receiving device (18.1, ..., 18.5, 18.6) along a guidance arrangement (52).

38. (Currently Amended) The printing device in accordance with claim [[1]] 37, wherein the conveying device (50) has at least one of a toothed belt, a belt, and a conveying element.

39. (Currently Amended) The printing device in accordance with claim [[1]] 37, wherein the guidance ~~device~~ arrangement can be an arrangement of one of guide rods (52), guide rails, and guide elements.

40. (Currently Amended) The printing device in accordance with claim [[1]] 37, wherein the guidance arrangement (52) forms one of a closed track, ~~and or~~ a conveying circuit for conveying the receiving device (18.1, ..., 18.5, 18.6).

41. (Currently Amended) The printing device in accordance with claim ~~[[1]]~~ 40, wherein a cleaning device (54) for the receiving device (18.1, ..., 18.5, 18.6) is arranged at ~~[[a]]~~ the closed track or the conveying circuit.

42. (Currently Amended) The printing device in accordance with claim 1, wherein ~~[[the]]~~ a cleaning device (54) is arranged following the last printing unit (10.6) of the printing units (10.1, ..., 10.5, 10.6) arranged one behind the other in the conveying direction of the receiving device (18.1, ..., 18.5, 18.6), and the receiving device (18.1, ..., 18.5, 18.6) can be introduced into the cleaning device (54) following the removal of the substrate (14.1, ..., 14.5, 14.6).

43. (Previously Presented) The printing device in accordance with claim 1, wherein a cleaning device (54) is arranged upstream of the first printing unit (10.1) of the printing units (10.1, ..., 10.5, 10.6) arranged one behind the other in the conveying direction (A) of the receiving device (18.1, ..., 18.5, 18.6).

44. (Currently Amended) ~~The printing device in accordance with claim 1,~~ A printing device, having at least one electro-photographic printing unit (10.1), to which a transfer medium (12) for transferring a toner powder to respectively one substrate (14.1, ..., 14.5, 14.6) in a transfer zone is assigned, wherein one or more substrates (14.1, ..., 14.5, 14.6) can be conducted through the transfer zone by a transport system (16), the printing device comprising:

the transport system (16) for each said substrate (14.1, ..., 14.5, 14.6) having a receiving device (18.1, ..., 18.5, 18.6) which can be heated, to which one or more heating elements (20.1, ..., 20.5, 20.6) for introducing heat energy into the substrate (14.1, ..., 14.5, 14.6) are assigned, and

a cooling device (28) is assigned to the transfer medium (12) of each said printing unit, which removes heat energy from the transfer medium (12);

wherein the substrate (14.1, ..., 14.5, 14.6) is respectively received in a separate receiving device (18.1, ..., 18.5, 18.6) downstream of ~~[[the]]~~ a cleaning device (54) and upstream of the first printing unit (10.1) of the printing units (10.1, ..., 10.5, 10.6) in ~~[[the]]~~ a conveying direction (A) of the receiving device (18.1, ..., 18.5, 18.6).

Serial No.: 10/567,471

45. (Currently Amended) The printing device in accordance with claim 1, wherein the transfer medium (12) is a transfer roller or a transfer belt containing at least a portion of the cooling device ~~(12)~~ (28).

46. (Currently Amended) The printing device in accordance with claim 1, wherein the transfer medium ~~(120)~~ (12) of the printing unit (10.1, ..., 10.5, 10.6) has a lower temperature in the transfer zone formed with the substrate (14.1, ..., 14.5, 14.6) at least in an area of the contact surface, than a surface of the substrate (14.1, ..., 14.5, 14.6).

47. (Previously Presented) The printing device in accordance with claim 1, wherein the substrate (14.1, ..., 14.5, 14.6) rests on a conductive support of the receiving device (18.1, ..., 18.5, 18.6) and the support is charged with a reversed polarity sign compared with the charge of the toner.

48. (Previously Presented) The printing device in accordance with claim 1, wherein the substrate (14.1, ..., 14.5, 14.6) is moved by the transport system (16) beyond the transfer medium (12) synchronously with a circumferential speed of the transfer medium (12), and a voltage which, with respect to the transfer

Serial No.: 10/567,471

medium, is opposite to the charge of the toner, is applied to the receiving device (18.1, ..., 18.5, 18.6) in the transport system (16).

49. (Withdrawn) The printing device in accordance with claim 1, wherein each said substrate (14.1, ..., 14.5, 14.6) is charged by the heating elements (20.1, ..., 20.5, 20.6) embodied as at least one of infrared radiation devices, hot-air blowers and by charging with heat energy.

50. (Previously Presented) The printing device in accordance with claim 1, wherein each said substrate (14.1, ..., 14.5, 14.6) can be charged with heat energy by one of a metal tape heating and a metal foil heating device, wherein a wavelength of heat radiation can be exactly matched to an absorption maximum of at least one of the substrate and a plastic matrix of the toner.

51. (Previously Presented) The printing device in accordance with claim 1, wherein a temperature sensor (26) is assigned to the substrate (14.1, ..., 14.5, 14.6), at least one of the heating element (20.1, ..., 20.5, 20.6) and the transport system (16) can be controlled by a control device (24) as a function of a signal emitted by the temperature sensor (26).

Serial No.: 10/567,471

52. (Currently Amended) The printing device in accordance with claim 51, wherein the temperature sensor (26) is a pyrometer.

53. (Previously Presented) The printing device in accordance with claim 1, wherein a conditioned air flow is directed onto a surface of at least one of the transfer medium (12) and at least one liquid-cooled contact roller of the cooling device (28) roll off on the transfer medium (12).

54. (Previously Presented) The printing device in accordance with claim 1, wherein the cooling device (28) removes heat energy from the transfer medium (12) downstream of the transfer zone and upstream of the photo-conductor (30) of the printing unit (10.1), viewed in the transport direction of the transfer medium (12).

55. (New) The printing device in accordance with claim 44, wherein each said heating element (20.1, ..., 20.5, 20.6) is arranged on a side of the substrate (14.1, ..., 14.5, 14.6) facing away from the receiving device (18.1, ..., 18.5, 18.6) of the transport system (16).